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10/043,404	01/10/2002	Masaharu Shioya	02008/LH	9052

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FRISHAUF, HOLTZ, GOODMAN & CHICK, PC  
767 THIRD AVENUE  
25TH FLOOR  
NEW YORK, NY 10017-2023

EXAMINER

KALAFUT, STEPHEN J

ART UNIT

PAPER NUMBER

1745

DATE MAILED: 08/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Applicant(s)

10/043,404

SHIOYA ET AL.

Examiner

Stephen J. Kalafut

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-23, 27-31 is/are rejected.
- 7) ☒ Claim(s) 5 and 24-26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

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Claims 11 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The phrase "a shape and dimensions equivalent to those of various kinds of general-purpose chemical cells" is considered to have indefinite scope. The phrase does not point out what particular cells are intended, or how close a comparison is required for the shape and dimensions to be "equivalent".

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 6-8, 13, 16, 17, 21, 22 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Ohara *et al.* (EP 1 009 054).

Ohara *et al.* disclose a power supply system which comprises a fuel cell (1) which generates power, a "fuel charged" device (2) which supplies fuel to the fuel cell, output controlling means (7) and a startup controlling means comprising a battery (5) and a switch (11), which supplies power to the output controlling means (7) for its operation. The startup controlling means, because of the switch (11), would be independent of the fuel cell operation, but would supply power when needed. The charge control unit (6) and a second switch (10) allow the power to have two different paths between the battery and the output controlling means. The battery would constitute the "electric power holding means" and would hold power

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depending on the output of the fuel cell. The battery, unless it is manufactured in a completely discharged condition, would also hold some power from outside the system. The system also includes a connection (4) to an external load. The switches (8, 10, 11) within the system would constitute the "system controlling means" which would carry out or stop the power generating process of the fuel cell and the charge of the battery. The output controlling means also includes a voltage converting means (3), which would be the "supply electric power generating means".

Claims 16, 17, 21, 22 and 29 are rejected under 35 U.S.C. 102(b) as being anticipated by Bonnefoy (either US 5,714,874 or DE 44 31 747).

Bonnefoy discloses a power generating system including a fuel cell (1) which generates power, and has a fuel supply (column 2, lines 40-45), or "fuel charged portion"; a battery (3), which would be an "electric power holding means"; and a "system controlling means" (5), which would operate or stop the operation of the fuel cell and the resulting charge of the battery (column 2, lines 48-62, column 4, lines 1-7). The system also includes a load (4), and a voltage converting means (2), which would be the "supply electric power generating means". The above column and line cites are in the United States patent, but both documents are used as a respective ground of rejection, the American patent being a translation of the German document. The reference numerals apply to both documents.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 9 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohara *et al.* in view of Yamamoto (US 4,883,724).

These claims differ from Ohara *et al.* by reciting that the fuel cell is of the reforming type, where a raw fuel is reformed into a component which is used by the fuel cell. Yamamoto discloses a fuel cell with a reformer (2), which converts a raw material into a component which is useful in the fuel cell (column 1, lines 10-15, column 3, lines 59-65), and uses heat generated by the combustion of fuel cell waste products to help this conversion (column 4, lines 6-12). Because a reformer may produce, from a hydrocarbon (column 3, line 61), a material useful in the fuel cell reaction, as well as consume fuel cell waste products, it would be obvious to use the reformer of Yamamoto with the fuel cell of Ohara *et al.*

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnefoy (either US 5,714,874 or DE 44 31 747) in view of Yamamoto.

These claims differ from either Bonnefoy document by reciting that the fuel cell is of the reforming type, where a raw fuel is reformed into a component which is used by the fuel cell. Yamamoto discloses a fuel cell with a reformer (2), which converts a raw material into a component which is useful in the fuel cell (column 1, lines 10-15, column 3, lines 59-65), and uses heat generated by the combustion of fuel cell waste products to help this conversion (column 4, lines 6-12). Because a reformer may produce, from a hydrocarbon (column 3, line

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61), a material useful in the fuel cell reaction, as well as consume fuel cell waste products, it would be obvious to use the reformer of Yamamoto with the fuel cell of Bonnefoy.

Claims 11, 12, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohara *et al.* in view of Hockaday (US 5,759,712).

These claims differ from Ohara *et al.* by reciting that the fuel cell is modularized, is shaped and dimensioned equivalent to various chemicals cells, and has a double electrode terminal structure. Hockaday discloses fuel cells which match the physical profile of a D-cell battery (column 11, lines 3-5) and are thus modularized, and are shaped and dimensioned equivalent to a type of generally used cell. The cell also has a double electrode terminal structure (figures 13 and 14B). Because this allows for the cells to be stacked along a common gas supply tube to obtain a large amount of power (column 2, lines 64-65), and because they are convenient and relative harmless to the environment (column 3, lines 63-65), it would be obvious to use the fuel cells of Hockaday in the system of Ohara *et al.*

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over either Ohara *et al.* or Bonnefoy, each in view of Wilkinson *et al.* (US 6,096,448).

These claims differ from Ohara *et al.* and each Bonnefoy document by reciting the use of at least one capacitor in the "electric power holding means". Wilkinson *et al.* disclose a fuel cell which is periodically connected to a transient load, such as a capacitor, which then supplies power to a load, and thus meeting its demand, when the fuel cell is rejuvenated (column 4, lines 23-36 and column 5, lines 51-59). To obtain this benefit for the fuel cells of Ohara *et al.* or

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either Bonnefoy document, it would be obvious to use with those fuel cells a capacitor as taught by Wilkinson *et al.* The number of capacitors would be a matter of optimization to the ordinary artisan, in response to the magnitude of the potential loads.

Claims 10, 14, 15, 23, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohara *et al.* in view of Stone *et al.* (US 5,439,758).

These claims differ from Ohara *et al.* by reciting that the fuel charged portion is detachable, or that the rest of the system is integral with an electronic device. Stone *et al.* disclose a fuel cell system which includes a removable fuel unit (24), while Ohara *et al.* disclose components which are connected together, and thus would be “integrally constituted”, the load (connected to the terminal 4) being an electronic device. Since the arrangement of Stone *et al.* allows depleted fuel to be replaced, it would be obvious to use a detachable fuel unit as shown by Stone *et al.* in the fuel cell system of Ohara *et al.*

Claims 23, 30 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bonnefoy (either US 5,714,874 or DE 44 31 747) in view of Stone *et al.*

These claims differ from each Bonnefoy document by reciting that the fuel charged portion is detachable, or that the rest of the system is integral with an electronic device. Stone *et al.* disclose a fuel cell system which includes a removable fuel unit (24), while Bonnefoy, in either document, disclose components which are connected together, and thus would be “integrally constituted”, the load (4) being an electronic device. Since the arrangement of Stone

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*et al.* allows depleted fuel to be replaced, it would be obvious to use a detachable fuel unit as shown by Stone *et al.* in the fuel cell system of Bonnefoy.

Claims 5 and 24-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The use of a primary battery in a fuel cell startup controlling means, and the details of the control device of claim 24, are not disclosed by the prior art applied above or cited by applicants.

The reference to Hockaday *et al.* (WO 00/35032), cited as an "X" in the International Search Report, has been considered, but does not disclose the present controlling components.

The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 703-308-0433. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

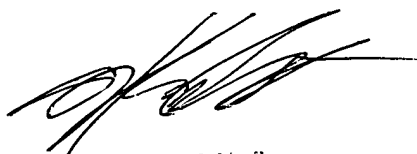
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 703-308-2383. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

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